The beachflea *Platorchestia platensis* (Krøyer, 1845): a new addition to the Polish fauna (with a key to Baltic talitrid amphipods)*

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Abstract

The present paper reports for the first time on the occurrence of *Platorchestia platensis* (Krøyer, 1845) (Crustacea, Amphipoda) in Puck Bay (southern Baltic, Poland) in May 2005. A key to the Baltic talitrids is given, which can be used to identify males and females of the four species occurring on Polish shores (*Talitrus saltator*, *Talorchestia deshayesii, Orchestia cavimana, Platorchestia platensis*) and additionally *Orchestia gammarellus*, which may yet be found in the Polish coastal zone.

Only three species of talitrid amphipod (Crustacea) have been recorded from Polish shores. The sandhoppers *Talitrus saltator* (Montagu, 1808) and *Talorchestia deshayesii* (Audouin, 1826) are ubiquitous beneath flotsam and jetsam or wrack cast up at the high water mark on sandy beaches

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(Urbański 1948, Drzycimski & Nawodzińska 1965, Żmudziński 1990, 1999, Kruk-Dowgiałło 2000, Węsławski et al. 2000 a, b, Kozieł 2004). Both species bear quite distinctive dorsal markings, which easily separate them from each other, and from the beachfleas (Photo 1 & 2). *Orchestia cavimana* (Heller, 1865) is a 'freshwater' beachflea common in the Szczecin Lagoon, at the mouth of the River Oder (Odra), from where it has reached the Polish Island of Wolin (Urbański 1948); it has also been observed in the Vistula Lagoon and in the Dead Vistula River (Żmudziński 1990). It has also recently been recorded for the first time on the Estonian coast (Kotta 2000). *O. cavimana* is commonly found in damp habitats, beneath stones and decaying vegetation close to fresh or brackish water.

There is a fourth talitrid that has been recorded from Poland, the euterrestrial *Talitroides alluaudi* (Urbański 1948, Černy & Straškraba 1958). However, where it occurs in Poland, and in the other Baltic countries (e.g. Finland, Sweden), it is restricted to greenhouses (Vader 1972) and so is not considered any further here.

The common beachflea of NW European shores *Orchestia gammarellus* (Pallas, 1766) extends into the Baltic to Västervik along the Swedish east coast, and allegedly as far as the Gulf of Riga on the Latvian coast (Dahl 1946) but, according to Urbański (1948) and Jażdżewski & Konopacka (1993), it does not occur in Poland. Its absence from Poland led Den Hartog (1963) to conclude that the record from Riga required checking. Where it does occur, it occupies the same kind of habitats as *O. cavimana*, but with a much more marine distribution.

Here we report the first occurrence on Polish shores of the semiterrestrial beachflea *Platorchestia platensis* (Krøyer, 1845) (Photo 3). Unlike the other Polish talitrids, this species has a cosmopolitan distribution, occurring in supralittoral marine environments on the Atlantic coast of Canada and the USA (Bousfield 1973), Uruguay and Brazil in South America (Stebbing 1906), Bermuda (Kunkel 1910), the West Indies (Bousfield 1973), the Canary Islands (Andersson 1962), Israel (Morino & Ortal 1995), India (Chilton 1921), Japan (Ruffo 1949, Morino 1978), Korea (Jo 1988), Hawaii and other Pacific Islands (Stephensen 1935) (although note that Stock & Biernbaum (1994) have proposed some differentiation, delineating a tropical variation that they designate *P. platensis* f. *monodi*). *P. platensis* also occurs on a number of shores in NW Europe (see below) but until now has been considered absent from Poland (Jażdżewski & Konopacka 1993, Żmudziński 1999). It is believed that *P. platensis* arrived in NW Europe on Danish coasts in the 1860s (Dahl 1946) and from there had extended its range to the Swedish west coast by the 1940s (Backlund 1945, Dahl 1946, Karlbrink 1969), north to southern Norway by the 1980s (Teigsmark

Photo 1. *Talitrus saltator* from the sandy beach in Gdańsk, June 2005 (length 13.5 mm). Normally greyish-brown in colour, larger individuals possess a distinctive black/brown streak that runs the length of the dorsal surface

Photo 2. *Talorchestia deshayesii* from Puck Bay, May 2005 (♀ length 8.5 mm). Although they can be variable in colour (brown, green or even orange/red), individuals often possess three lines of darker spots running the length of the dorsal surface

Photo 3. *Platorchestia platensis* from Puck Bay, May 2005 (♀ length 9.3 mm). The body colouration of this species can be very similar to *Orchestia gammarellus* and *Orchestia cavimana*, ranging from dark blue through dark brown and greenish brown, sometimes orange

1981) and to the Baltic coast of Sweden and Germany by the 1990s (Zettler 1999, Persson 2001, although see the much earlier record of Urbański (1948), confirmed by Köhn & Gosselck (1989), showing that *P. platensis* was present at numerous points along the German Baltic coast more than a half century ago). It has also been recorded from the Netherlands (Den Hartog 1963) (but not the deltaic region (Platvoet & Pinkster (1995)) and the Thames in the UK (Wildish & Lincoln 1979).

The Polish population of *P. platensis* was found beneath stones and debris wedged within a stone coastal defence structure on the southern shore of the Hel Peninsula at Kuźnica (Puck Bay). In May 2005 24 specimens were collected and identified using two key characteristics: uropod 1 outer ramus with distal spines only and the posterior margin of epimeral plate 3 crenulate. Additionally, one specimen of *O. cavimana* was recorded at the same place. *P. platensis* has been seen to co-occur with, and in some cases has outcompeted *O. gammarellus* (Backlund 1945, Dahl 1946, Persson 2001). No *O. gammarellus* were identified in our beachflea collection. It is not known whether *P. platensis* has ousted *O. gammarellus* from Polish shores or invaded a vacant niche. The fact that some studies have noted the absence of *O. gammarellus* in the past tends to favour the latter explanation, but

a more extensive sampling regime is required before any definitive statement can be made.

Talitrids are notoriously difficult to identify, and marked sexual dimorphism in some species further complicates this process (Lincoln 1979). Below we give a key to the Baltic talitrids that can be used for both males and females of each of the four species already occurring in Poland; we have added also *O. gammarellus*, which may yet be found in the Polish coastal zone.

Key to Baltic talitrid amphipods

1. Gnathopod 2 with enlarged propodus and dactylus (Fig. 1) ..... 2.
   Gnathopod 2 with small propodus and dactylus (Fig. 2) ..... 5.
2. Long curved process on propodus of gnathopod 2 (Fig. 1a) ..... male *Talorchestia deshayesii*.
   No such process present on propodus of gnathopod 2 (Fig. 1b) ... 3.
3. Uropod 1 outer ramus with distal spines only (Fig. 3a) ..... male *Platorchestia platensis*.
   Uropod 1 outer ramus with a row of spines along the dorsal margin (Fig. 3b) ..... 4.
4. Gnathopod 1 merus with posterior lobe (Fig. 4a) ..... male *Orchestia cavimana*.
   Gnathopod 1 merus without posterior lobe (Fig. 4b) ..... male *Orchestia gammarellus*.
5. Uropod 1 outer ramus with distal spines only (Fig. 3a) ..... female *Platorchestia platensis*.
   Uropod 1 outer ramus with a row of spines along the dorsal margin (Fig. 3b) ..... 6.
6. Gnathopod 1 propodus without palm (Fig. 5a) ..... 7.
   Gnathopod 1 propodus with small palm (Fig. 5b) ..... 8.
7. Uropod 3 ramus almost as long as peduncle with single large spine as long as the ramus (Fig. 6a) ..... male or female *Talitrus saltator*.
   Uropod 3, ramus much shorter than peduncle (Fig. 6b) ..... female *Talorchestia deshayesii*.
8. Gnathopod 2 merus without posterior lobe (Fig. 2a) ..... female *Orchestia gammarellus*.
   Gnathopod 2 merus with posterior lobe (Fig. 2b) ..... female *Orchestia cavimana*.

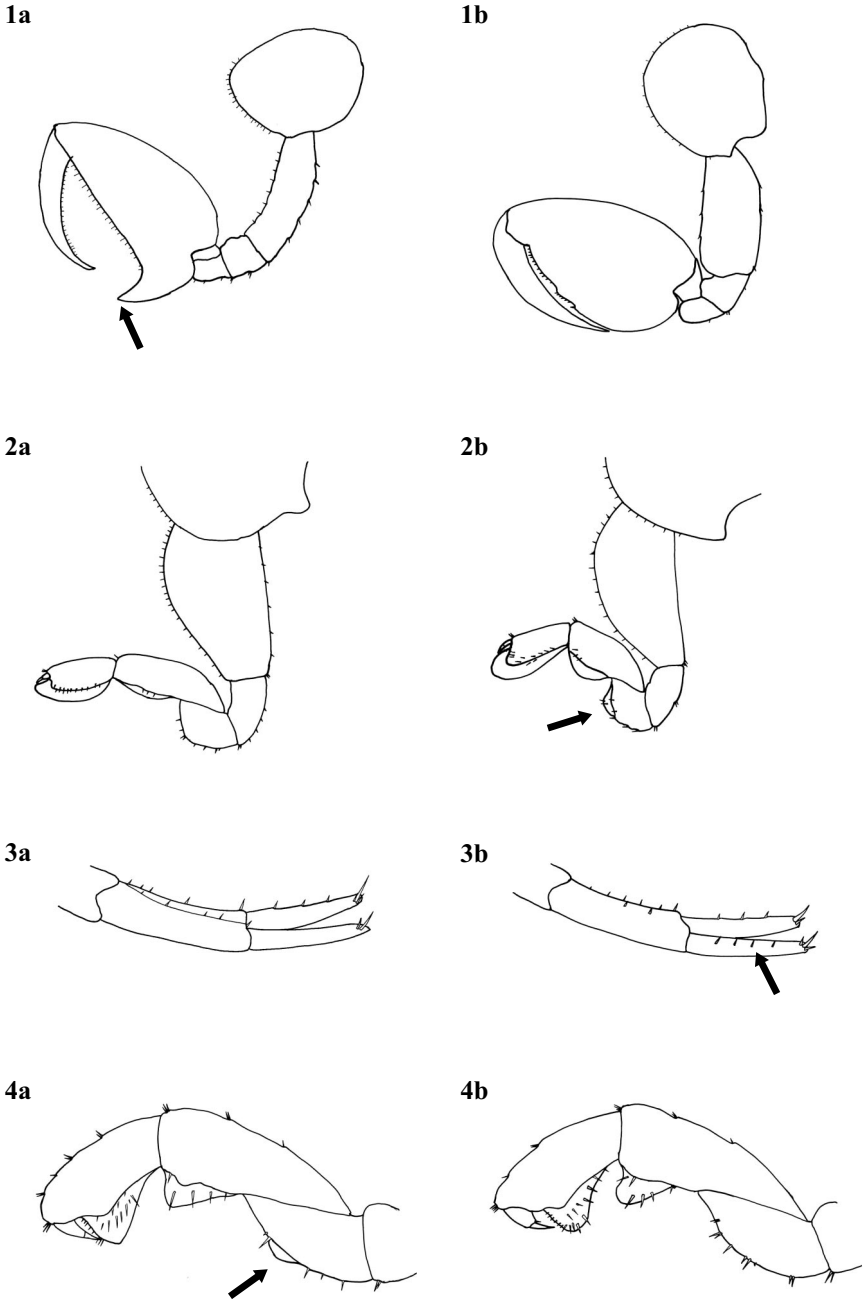

Fig. 1–6. Talitrid amphipods: (1a and 1b) gnathopod 2, male; (2a and 2b) gnathopod 2, female or male; (3a and 3b) uropod 1, female or male; (4a and 4b) gnathopod 1, male; (5a and 5b) gnathopod 1, female or male; (6a and 6b) uropod 3, female or male (*continued, p. 293*)

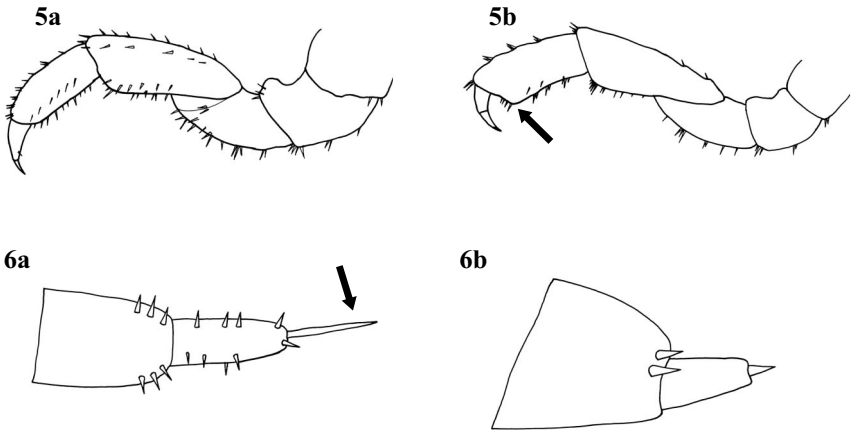

Fig. 1–6. (*continued*)

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